NEWS LETTER

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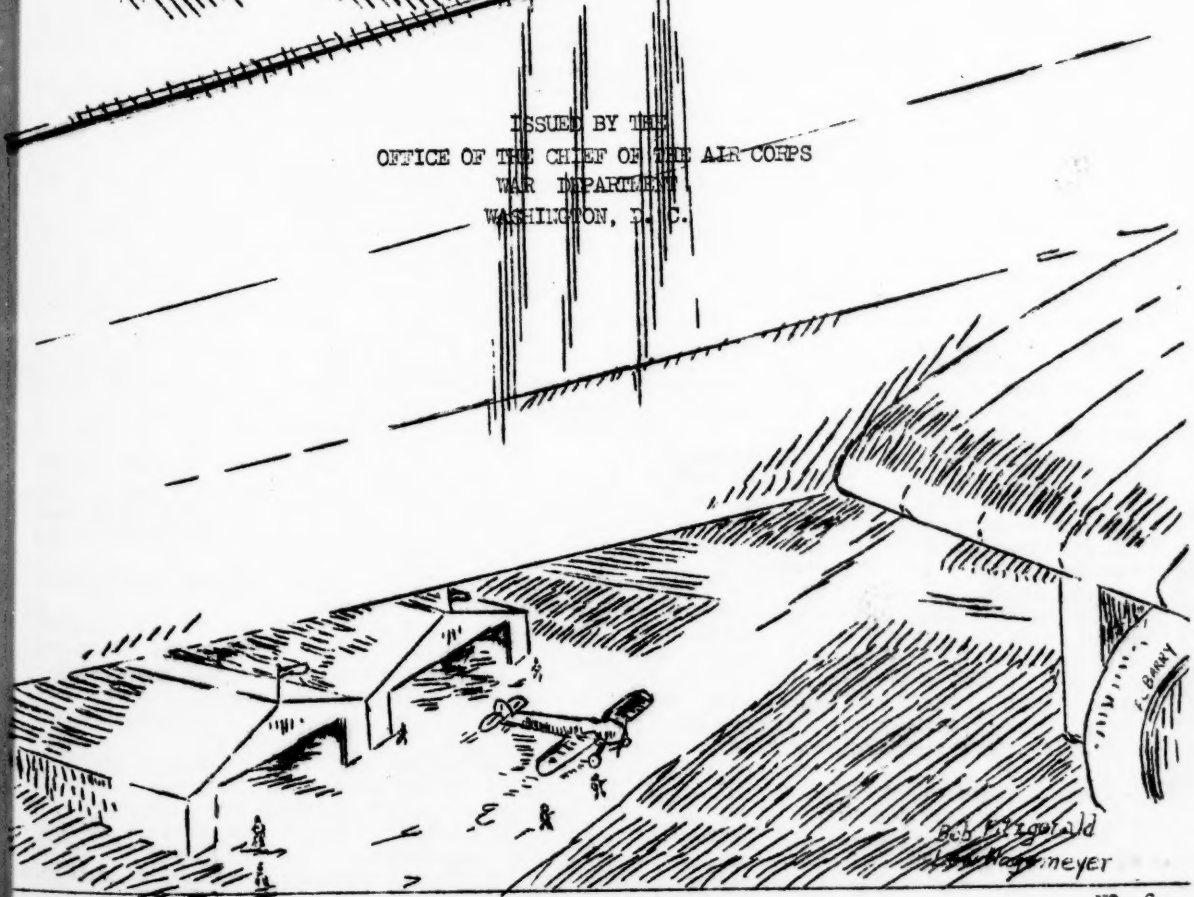

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THE AIR CORPS' WEST COAST EXERCISES - 1933

THE Spring of 1933 has seen considerable activity in several localities on the part of the Army Air Corps. "Home stations" in most cases showed a corresponding lack of life in the air or in and around the hangars. Those groups and squadrons which had not flown to Ohio and Kentucky for the Air Corps - Anti-Aircraft Exercises between Patterson Field and Fort Knox, were getting ready for flights elsewhere; to some place where these same Air Corps units would be temporarily consolidated and in a body go through the training peculiar to the provisional organization of which they were a part. Supplies of fuel and oil were being diverted to those places where the Army planes were to be active. The organization of all these units was to be provisional GHQ Air Force; the air force which, in time of war, would be placed at the immediate disposal of the commander of our Armies in the field.

Commander and Staff

The commander of this Air Force, appointed by the War Department upon recommendation of the Chief of the Air Corps, was Brigadier-General Oscar Westover, Assistant Chief of the Air Corps with station in Washington, D.C. His staff, appointed by him were the following (also from Washington, unless otherwise noted):

Aide	- Lieut. Ray L. Owens
Chief of Staff	- Lt.-Col. H.H. Arnold, C.O., March Field, Calif.
Asst. Chief of Staff	- Capt. John I. Moore, Maxwell Field, Ala.
G - 1	- Major Arnold N. Krogstad
Asst. G-1	- Capt. Richard H. Ballard, Hqrs. 3rd Corps Area.
Adjutant General	- Capt. Lewis A. Dayton, Kelly Field, Texas.
G-2	- Major Clarence L. Tinker, March Field, Calif.
Asst. G-2	- Capt. Howard K. Ramey, Kelly Field, Texas.
Asst. G-2	- Lieut. Roland Birnn
G-3	- Major Ralph Royce
Asst. G-3	- Capt. Arthur B. McDaniel
Asst. G-3	- Capt. Harlan W. Holden
Asst. G-3	- Capt. Odas Moon, Kelly Field, Texas.
G-4	- Major Jacob H. Rudolph
Asst. G-4	- Capt. Claude E. Duncan, March Field, Calif.
Asst. G-4	- Lt. Wm. J. Hanlon, Wright Field, Ohio.
Signal Officer	- Capt. Wm. H. Murphy, S.C.
Asst. Signal Officer	- Capt. Alfred H. Thiessen, SC
Asst. Signal Officer	- Lt. Victor A. Conrad, S.C.
Asst. Signal Officer	- Lt. Wiley Y. Carter, S.C. March Field. Calif.
Asst. Signal Officer	- Capt. Charles H. Dowman, AC March Field, Calif.
Surgeon	- Lt.-Col. Glenn I. Jones, M C
Technical Inspector	- Major Junius W. Jones

This staff was later augmented by officers from the Air Corps Tactical School, Maxwell Field, Alabama.

Choice of Locality

It had been desired to hold the Exercises in that most important strategic area which surrounds Puget Sound in the Northwest, thus varying the terrain with which the "veterans" of the 1929, 1930 and 1931 exercises in Ohio, Central California and the Northeast, respectively, were familiar. While the desirability of varying the locale called for some place in the Southwest or Northwest, the need for economy dictated the choice of a West Coast locality where government housing, a single base for the entire air force and ready supply facilities were available. March Field, near Riverside, Calif., about 50 air miles inland from Los Angeles, was the logical site under those conditions. The field was large enough to accommodate many more than the 330 airplanes eventually parked around its borders; there was barrack space already available to house the incoming enlisted men, tentage for the officers and established messing facilities for both; and the Rockwell Field Air Depot with its supply of parts and accessories was less than 100 miles away, by air. Then, too, the proximity of March Field to the coast offered opportunity for working out problems of coast defense, while the numerous airports available in the Los Angeles area permitted their actual occupancy as "dispersed airdromes." This latter consideration is an important one in peace time operations where funds are not available for converting possibilities into actualities and where the commandeering of private property, such as pasture-lands, etc., is not only legally impossible but unthinkable.

Problems of Preparation

Once the locality of the Exercises was chosen, the problem of flying there came under consideration. Two tests were made in this respect, - 1. The mobility of the Air Corps' tactical units, or other ability to mobilize on short notice, and 2. The ability of groups and squadrons to move as, when and where directed, assuming some larger scheme of movement of which the GHQ Air Force was but one element or assuming a geographically narrow air route with no servicing or emergency landing facilities on either side.

Test No. 1 was carried out by means of sealed orders delivered to the Commanders of the units concerned, these orders being opened but a day or so before the actual take-off for March Field. Preliminary instructions were quite general, - the officers at the various Air Corps stations knowing only that some time early in May a certain number of squadrons from that station would fly to the West Coast, the exact time, the route to be flown and other important details being inside the sealed envelope. The situation at this point was somewhat akin to that in which a declaration of war was imminent, with tactical air force units throughout the country being held in readiness for the first combat order; but with no exact knowledge of what that order would contain. With the air force components of the Army Air Corps representing the first line of defense, of this country's land-based forces, the test of their readiness for such action is an important one.

As to Test No. 2 in this concentration, let us consider the effect of war on our national airways. The flying of mail, valuable supplies, and high military and civilian officials by commercial airways, and the fer-

rying of other military aircraft would tax the commercial airways to such an extent that would allow no divergence from their regulating schedules to accommodate suddenly a squadron or group of military aircraft which had been forced by bad weather off its scheduled route along some other airways. A geographical "bottleneck" made by a long narrow valley, or series of valleys, between two mountain ranges would impose the same necessity, in peace as in war, of the air units using such airway keeping to the "straight and narrow path." Such a "bottleneck" was the one from El Paso through Tucson, past Yuma and up the Imperial Valley to March Field, and practically all west-bound air units were routed through that passage. The servicing stops were barely adequate for one group at one time; with a noticeable lack of emergency fields off the designated air route. Aerial "march tables" were, therefore, written whereby the air units were regulated through the bottleneck in the same general manner as an infantry division is moved along a series of highways to its goal. Should impassable weather around Phoenix hold a group on the ground at Tucson, there could be no crowding ahead by other units to the east. If the low ceiling and visibility had shifted eastward and a group were dispatched from El Paso to Tucson with the probability of their being forced to turn back to El Paso, there could be no take-offs from the eastern portal of the "bottleneck" until the first unit had "cleared the air" by landing at Tucson or returning to El Paso. In other words, neither the air nor the servicing fields could be cluttered up with more airplanes than could be efficiently accommodated therein or thereon.

March Field Prepared.

While plans to move the various units were being laid, Lt.-Col. H.H. Arnold, the Commanding Officer of March Field and Chief of Staff of the Provisional GHQ Air Force was preparing his field for the visitors. A parking area for each unit was laid out in front of the hangar line or along the West border of the field and a system of aerial transportation of supplies from the Rockwell Air Depot was instituted.

Participating Units.

In addition to the 1st Bombardment Wing at March Field, the visitors were to be the 2nd Bombardment Wing from Langley Field, Va.; 3rd Attack Wing from Barksdale Field, La. and Fort Crockett, Texas; 19th Bombardment Group from Rockwell Field, Calif.; 12th Observation Group Hqrs. and one Observation Squadron from Brooks Field, Texas; Hqrs. of 9th Observation Group from Mitchel Field, N.Y.; officers and airplanes from the Air Corps Tactical School, Maxwell Field, Ala., transports and pilots from all Army fields in the United States.

The Flight to March Field

May 3rd, the day of the first take-off for March Field, was one of rain, fog and that kind of weather in the East and South that made flying in large formations too dangerous for peace time operations, and a few of the units involved attempted a start. The following day was slightly better and some real progress was made toward the goal. Sandstorms through West Texas the following two days put further crimps in the "march tables." However, such weather was not responsible for the unaccountable but fatal crash of Lieut. Wayne Gardner and his passenger, Staff Sgt. Arthur I. Huntley, of the 3rd Attack Group, near Alpine, Texas, as far as has been determined. At Fort Clark, Texas, a Transport crashed and burned upon landing without serious injury to its occupants, but this, too, was not caused by weather conditions. At Midland another Transport landed safely in the sandstorm in a 47 mph wind, and then went through all the motions of tail-spinning at zero altitude.

The Air Force Commander, leading a formation of several of his staff officers, flew into Amarillo through one such storm, continuing next day to El Paso, where at Biggs Field he established the first Command Post at the portal to the El Paso-March Field "bottleneck." From this C.P. the movement of aerial troops through the narrow air lanes was regulated. Telegraph, telephone and radio played a part in such regulation, which became necessary whenever there was any deviation from the previously published march tables. In one instance the Commander of the 8th Pursuit Group at Midland was warned of bad weather portending at El Paso and instructed to make no attempt at getting in to the latter place after a certain hour. Spurred by these instructions the fueling at Midland was hastened, the flight over the pipe-line route was made at an increased speed and a safe landing effected at El Paso just before the storm broke.

Tired as the pilots and mechanics were, on several occasions after a hard flight, it was sometimes necessary for them to stand by their ships after they were staked down and keep watch that the sand flinging gales did no damage. Several times the smaller formations, such as Wing Hqrs. flight, were able to get through on schedule in weather that would have endangered a larger formation such as a group.

Except for the 9th Observation Group Headquarters flight of 5 planes, the last unit came into March Field on Sunday, May 7th, averaging one day behind schedule for this first phase of the Exercises. That day the Command Post shifted from Biggs Field, El Paso, to Hangar 4 at March Field, where the temporary offices of the GHQ Air Force had been installed. By dint of hard work on every one's part, especially the mechanics and engineer officers, the first day of the Exercises at March Field, May 8th, was only one-half day behind, but May 9th saw everything up to schedule and moving smoothly along. Serious as the fog and rain, and the sandstorms had been their handicaps had been overcome by all but a very few of the 227 airplanes flying in from the East and South.

The Air Force Organization

The Air Force staff organization has been previously described. The Air Force body was organized as follows upon the arrival of all units at the concentration point:

Unit	Home Station	Commander and Staffs.
1st Bombardment Wing	March Field, Calif.	Major Carl Spatz. *S-1 and S-4 Lt.M.M. Murphy; S-2, Capt. G.T. Collar; S-3, Capt. W.C. Morris
7th Bombardment Group		Major J.T. McNarney. S-1 and S-4, Lieut. E.S. Wetzel; S-2, Lt. E.H. Beebe; S-3, Lt.E.T. Noyes.
9th Bomb. Squadron		Capt. H.D. Smith; S-3, Lieut. W.A. Matheny.
31st Bomb. Squadron		Lt. J.G. Moore; S-3, Lieut. W. Erickson
11th Bomb. Squadron (Provisional)**		Capt. Lowell H. Smith; S-3, Capt. Y.A.Pitts

*S-1, Administration, Personnel, Communications; S-2, Intelligence, Press and Public Relations Maps; S-3, Operations and Training; S-4, Supply and Transportation.

** Organized from Bombers and their personnel from the Tactical School, to take the place of the regular 11th Squadron absent on the Exercises in Ohio.

Unit	Home Station	Commander and Staffs
17th Pursuit Group	March Field, Calif.	Capt. Charles Douglas S-1 and S-4, Lieut. N.H. Ives. S-2, Lt. O.R.Deering; S-3, Lt. Joe Loutzenheiser
34th Pursuit Squadron		Lt. J.C.Crosthwaite; S-3,Lt.J.E.Mallory
73rd Pursuit Squadron		Lt.J.H. Dulligan; S-3, Lt.R.S.Israel
95th Pursuit Squadron		Lt. S.W. Towle; S-3, Lt. W.C. Morse
2nd Bombardment Wing	Langley Field, Va.	Col. C. C. Culver S-1, S-2, S-4, Capt. W.H. Reid. S-3, Major Maxwell Kirby.
2nd Bombardment Group - - - - - - - - - - - - - - -		Capt. George P. Johnson S-1, Lt.E.R. Todd; S-2,Capt.M.S.Lawton; S-3, Lt. R.S. Freeman.
20th Bomb. Squadron		Capt. R.T. Cronau; S-3,Capt.L. Dunlap; S-3, Lieut. Ladd.
49th Bomb. Squadron		Lt. E.E. Hillery; S-3, Lt.J.W. Wood.
96th Bomb. Squadron		Capt. J.P.Richter; S-3,Lt.L.G. Saunders.
8th Pursuit Group - - - - - - - - - - - - - - - - -		Major B.Q. Jones S-1, S-4, Capt. Newton Longfellow. S-2, S-3, Capt. J.T. Hutchison.
33rd Pursuit Squadron		Capt. H.H. George; S-3,Lt.W.A.Schulgen.
35th Pursuit Squadron		Capt. A.E. Waller; S-3,Lt.O.S. Picher.
36th Pursuit Squadron		Capt. M.L.Elliott; S-3, Lt.J.Hodgson.
3rd Attack Wing	Barksdale Field, La.	Major Millard F. Harmon. S-1, S-4, Major G.P.Anderson, CAC. S-2, Lt.L. Merrick;S-3,Maj.H.R.Harmon.
3rd Attack Group	Ft. Crockett, Texas	Major Harry H. Young. S-1, S-4, Lieut. A.H. Foster. S-2, Lt.F.I.Patrick;S-3,Capt.L.Harvey.
13th Attack Squadron		Lt.R.Stearley; S-3, Lt. T.L.Moseley.
90th Attack Squadron		Capt.J. Davidson; S-3,Lt.D.W.Jenkins.
20th Pursuit Group	Barksdale Field, La.	Capt. John M. Clark. S-1, S-4, Major T. Barnes, C.W.S. S-2, Capt.W.P. Hayes;S-3,Lt.W.R.Carter
55th Pursuit Squadron		Capt. H.L.Clark; S-3,Lt.J.A.Ellison.
77th Pursuit Squadron		Lt. H.M. Wittkop; S-3,Lt.E.E.Holtzen.
12th Observation Group	Brooks Field, Texas.	Major Frank D. Lackland. S-1,Lt. A.L.Bump; S-2, Lt.G. Geer; S-3,Capt.W.S.Gravely;S-4,Lt.J.J.O'Hara
22nd Obs. Squadron		Capt.R. Kauch; S-3, Lt.J.H. Hicks.
19th Bombardment Group (attached to 12th Obs. Group for long distance and off shore reconnaissance.)	Rockwell Field,Calif.	Capt. Harold M. McClelland. S-1,S-2,Lt.G.Kirksey;S-3,Capt. Westside T. Larson; S-4, Capt. C.W. Pyle.
30th Bombardment Sqdn.		Capt.J. Grisham; S-3,Lt. W.W. Gross.
32d Bombardment Sqdn.		Lt.Don FitzGerald;S-3,Lt.M.H.McKinnon.
9th Observation Group Hqrs.	Mitchel Field, N.Y.	Col. John H. Howard.
G.H.Q. A.F. Hq. Flight - - - - - - - - - - - - - - -		Captain E. Page S-3 (Airdrome Officer) Capt.J.K.Cannon Asst. S-3, Capt. A. Strickland. Asst. S-3, Capt. L.J. Maitland.
** 1st Provisional Transport Squadron - - - - - - - -		Captain Thomas Hastey;S-3, Lt.W. Davies

** Organized from transports and their pilots and crew chiefs from the various fields in the U.S., practically every station contributing at least one transport airplane to this transport pool.

Personnel and Equipment.

There were 390 officers and 1822 enlisted men concerned (including the regular garrison at March Field). The officers were billeted in individual and pyramidal tents and messed at a temporary mess set up outside the Officers' Club. The enlisted men were billeted and messed in the various squadron barracks at March Field. Unusually inclement weather for Southern California during the first ten days of the concentration gave the enlisted men the advantage in comfort.

The total number of airplanes used in the concentration was 328, divided as follows:

59 Observation. Mostly those planes flown by members of the G.H.Q. Staff; Douglas O-38B's, and a few O2-H's. Few of these participated actively in the flying missions of the Exercises. The 12th Observation Group had 15 Thomas Morse O-19's. The 9th Observation Group Hqrs. had 3 Curtiss O-39's and 2 Douglas bi-motored gull-winged O-35's. Several Douglas O-25's, with Curtiss "Conquerors" were also present.

5 Amphibians - Douglas bi-motored, from 19th Bomb. Group, attached to the 12th Observation Group, these amphibians being used on reconnaissance missions out to sea.

52 Bombardment - Mostly Keystone B-3a's or B-6A's, the former with two Pratt & Whitney "Hornets" of 525 h.p. and the latter with two Wright "Cyclones" of 575 h.p. each. Units so equipped were the 2nd and 7th Bombardment Groups, including the 11th Provisional Bombardment Squadron organized from Bombers of the Tactical School and assigned to the 7th Group.

37 Attack - Curtiss Falcon A-3B's, with 425 h.p. water-cooled engines, used by the 3rd Attack Group, plus a number of such planes from the Tactical School.

140 Pursuit - Mostly Boeing P-12C's, D and E, single-seater biplanes with supercharged Pratt & Whitney "Wasps." Eight Curtiss P-6E's, single seater biplanes with 600 hp Prestone-cooled "Conqueror" engines were used by the 8th Pursuit Group.

28 Transports - The majority of these were the Fokker C-14's, single engined, with the pilot's cockpit open and aft of the cabin. Several Ford tri-motors, one of which was the radio-equipped command plane. Others were single-engined American "Pilgrims,"

and tri-motored Fokkers.

Air Traffic Rules

Of interest to commercial operators, as well as to those in the service, are the air traffic rules drawn up by the Airdrome Officer of the Air Force to handle such a large number of airplanes in and around the March Field airdrome, or airdromes where special rules might be applicable.

1. All take-offs and landings at March Field were made in accordance with the manually operated "tee", located on the ground in front of the Administration Building.

2. After taking off from and in approaching March Field for a landing, turns were made to the left. This followed the normal procedure in commercial and military aviation.

3. In landing at March Field, airplanes cleared straight ahead to the boundary of the field, thence in column along the boundary of the field to designated parking area, except when a unit commander had the exclusive use of the airdrome; at which time he would taxi direct to his parking area.

4. Landings by units were not made on the apron,- an asphalted (Amiesite) mat, due to its hard surface, which was excellent for take-offs but rather conducive to "ground-loops" in landing.

5. Units approaching March Field for a landing checked in by radio with AF1.

6. Individual planes did not land while any unit was effecting a landing.

7. All airplanes, other than formations ordered on regularly scheduled missions in connection with the manouvers, obtained clearance from the airdrome officer. In case the pilot did not clear at the time designated, the authority for the flight was automatically cancelled. Pilots returning from these flights immediately checked in with the airdrome officer.

8. Commercial aircraft operating on regular schedule had the right of way over all military aircraft at all airdromes other than at March Field.

9. Aircraft in all cases were required to observe the local traffic rules of the field in question.

10. Department of Commerce air traffic rules applied.

11. Special traffic regulations were issued covering each night problem. The "light-beam" gun was extensively used in signaling, landing or "stand-bys."

12. Signals: In case the landing "tee" was removed from its place in front of the Administration Building, no landings were to be made on March Field until "tee" was replaced. Other than this, no special visual signals were employed for either take-off or landings during daylight hours.

Problems and Objectives.

Phase I of the Exercises had been satisfactorily completed. The leadership of the commanders of the migrating units and the piloting technique of the several hundred pilots concerned gave proof of the efficacy of the unit training and individual training of the Air Corps during the past year and years. There was no question of probable failure of any of the contemplated missions through inability of any class or group of pilots to perform their allotted tasks, or through the inexperience of the commanders in the guidance of their commands.

The general tasks of the provisional Air Force for the next few weeks would be the following:

Phase II. Dispersion of Air Force units to airdromes approximating war conditions, radio control of these units, rendezvousing of units from dispersed areas, control of the large units during flight and exercises developing the tactical defense of a coastal area. The objectives would be:

Reconnaissance and patrol of a coastal area.

Coordinated attacks against both land and water targets.

Cooperation with anti-aircraft units.

Test of bombing efficiency of Air Force units.

Airdrome reconnaissance by unit commanders.

Movement of units to dispersed airdromes.

Control of units on dispersed airdromes.

Carouflage and defense of dispersed airdromes.

Rendezvous of dispersed units.

Control of large units while in air.

Test of present radio communications.

Test of Staff's efficiency in supply and timing.

This phase was to take place during the three weeks' stay at March Field, during which time 15 separate days' problems would be assigned the units as outlined below, Saturdays and Sundays being reserved for maintenance and recreation.

1. Reconnaissance of dispersion areas by wing, group and squadron staffs and recommendations by them for dispersion of their units.

2. Actual dispersion of units.

3. Rendezvous of G.H.Q. Air Force from dispersed locations (prearranged).

4. Rendezvous of alerted G.H.Q. Air Force from dispersed locations (by radio).

5. Same as above, followed by trailing enemy force to base and attacking same after planes have landed.

During this Phase, Observation airplanes would reconnoiter to sea - day and night to locate enemy fleet (Mine Planter to simulate enemy fleet). Radio communications to be maintained throughout all problems.

6. Interception of an enemy bombardment group.

7. A meeting engagement of two opposing Air Forces with a situation which calls for decision on the part of each commander to change objective.

8. The attack of an enemy aircraft carrier by bombardment after dark, with Pursuit protection until dark.

9. The attack of an enemy aircraft carrier just before daybreak, with Pursuit protection after daybreak.

10. The defense and attack of a newly occupied airdrome.

11. Assembly in attack of enemy Air Forces immediately following an enemy raid.

12. Same problem with jamming of all possible radio lanes.

13. Attack by enemy on friendly bombardment when the friendly pursuit has already taken the air.

14. Attack in force on distant enemy base.

15. Movement of Air Force to an advanced base on short notice.

The following is a narrative of daily missions flown during this phase of the Exercises:

Monday, May 8th. Wing, group and squadron commanders, accompanied by such members of their staff as they deemed desirable, reconnoitered certain areas assigned their units for dispersion and selected the airdromes to be used. The various airdromes were considered from a logistical as well as a tactical point of view. The Pursuit planes had a shorter cruising range than the Bombers or Attack planes, and the Pursuit units were therefore placed, where possible, in fields closer to the coast line. In some instances, however, airdromes nearer the coast were better for Bombardment or Attack fields, and those inland more suitable for the Pursuit squadrons. In general, there was but one squadron allowed to an airdrome. Such dispersion was to spread the air force out so that too many eggs were not to be placed in one basket; the concentration of a large number of aircraft on the ground offering an excellent objective to possible enemy Bombers in time of war.

Tuesday, May 9th: The various units flew to their chosen and assigned airdromes in the dispersion areas and later assembled in the air by radio command for a short period of training by groups and wings. The airdromes were:

GHQ Air Force Hqrs.	March Field
1st Bomb. Wing Hqrs.	San Gabriel
7th Bomb. Group Hqrs.	" "
9th Bomb. Squadron	" "
11th " "	Fontana
31st " "	San Bernardino
17th Pursuit Group Hqrs.	Griffith Park
73rd Pursuit Squadron	" "
34th " "	Glendale
95th " "	Burbank
2nd Bomb. Wing Headquarters	Long Beach
2nd Bomb. Group	Arlington
49th Bomb. Squadron	"
20th " "	Santa Ana
96th " "	Elsinore
8th Pursuit Group	Long Beach
36th Pursuit Squadron	Long Beach
33rd Pursuit Squadron	Fullerton
35th Pursuit Squadron	Seal Beach
3rd Attack Wing Hqrs.	Mines Field
3rd Attack Group Hqrs.	Compton
90th Attack Squadron	Compton
13th Attack Squadron	Los Angeles
20th Pursuit Group Hqrs.	Los Angeles
55th Pursuit Squadron	Los Angeles
77th Pursuit Squadron	Dycer Airport
12th Observation Group	March Field
9th Observation Group Hqrs.	Van Nuys

Wednesday, May 10th. Rain during the morning resulted in the day's exercises being called off. This was to be a rendezvous at a prearranged time of the entire air force from the dispersed locations.

Thursday, May 11th. The rendezvous of the air force from the dispersed airdromes was directed by radio from the Commanding General, and from rendezvous with the 2nd Bombardment Wing as the guide unit, General Westover by means of radio from his airplane further directed the air force in subsequent movements which simulated an attack against enemy vessels off Long Beach. This rendezvous took about 15 minutes, and was effected in the following manner:

The 2nd Wing rendezvoused over Long Beach, its Bombardment Group at 3,000 feet altitude, and its Pursuit Group a bit higher but always available to afford protection for the Bombers. From this Wing rendezvous point at Long Beach, the Wing proceeded to Mines Field, the Air Force rendezvous point, the 2nd Wing climbing to 7000 feet altitude for the Bombers and 10,000 feet for Pursuit. Meanwhile, the 1st Bombardment and 3rd Attack Wings had rendezvoused over their respective Wing points and then proceeded to Mines Field, where their Pursuit Groups formed on the 2nd Wing's 8th Pursuit Group at 10,000 feet and the 7th Bombardment Group of the 1st Wing formed on the 2nd Wing Bombers at 7,000 feet. The 3rd Attack Group of the 3rd Wing formed under the bombing formations but at 2000 feet altitude. The combat elements of the Air Force then moved in a body to their objective.

Friday, May 12th. All units, except the 7th Bombardment Group, occupied their dispersed airdromes and went on the radio alert at 10:15 a.m. Starting at 9:30 a.m., the 12th Observation Group covered the nearby coastal area, seeking to locate the 7th Bombardment Group which represented an invading air force. After the "enemy" which flew in from Catalina Island had delivered their bombing raid on our coast they were to proceed to a certain secret airdrome which represented their own aircraft carrier out to sea.

Two of the six patrolling Observation crews located the incoming Bombers at 11:00 a.m. and radioed their location and course as they trailed them. The enemy landed at the Fillmore Airport. Our Air Force units (less the 7th Bombardment Group) rendezvoused and proceeded toward Fillmore, directed thereto by radio from the Commanding General.

Monday, May 15th. The problem was one in which Pursuit aviation was to intercept and attack enemy Bombardment aviation. The Wing organizations were broken up as such; the three Pursuit Groups being placed under Major B.Q. Jones and the two Bombardment Groups under Major Joseph T. McNarney. The 3rd Attack Group was given a day off. The 12th Observation Group patrolled the area, Oceanside - Escondida, Ramona, Henshaw Lake. The Pursuit units occupied their respective dispersed airdromes, but the Bombers proceeded to Rockwell Field, opened sealed orders directing them to attack Riverside and March Field, and took off again for such attack.

Spotted by several observation crews, who promptly radioed in their reports, the Bombers nevertheless proceeded toward their objective, reaching there just before being intercepted by the Pursuiters. The Observation planes being equipped with long wave radio sets, it was necessary for them to radio in their reports to the ground command set at March Field from whence the reports were relayed on the proper wave length to the Pursuit commander. This radio delay took in excess of four minutes, which was the length of time the Pursuiters were late in contacting the invading Bombers.

Tuesday, May 16th. A meeting engagement of two Bombardment Wings was carried out this day. The 1st Wing (7th Bombardment and 17th Pursuit Groups) plus 20th Pursuit Group and an Observation flight proceeded to Bakersfield where they landed, opening sealed orders there. The 2nd Wing (2nd Bombardment and 8th Pursuit Groups) plus the 3rd Attack Group and an Observation flight opened sealed orders at March Field at the same hour as at Bakersfield. Each order disclosed the whereabouts of the other force and ordered an attack thereon, which was called off just as the meeting was to be consummated.

Wednesday, May 17th. A morning and another night mission zere flown this date. In the morning the 3rd Attack Wing less the 3rd Attack Group was dispersed in the area: Clairmont, Highlands, Lake View and Corona. The 12th Observation Group patrolled the line - Cardiff-Mesa Grande. The 8th Pursuit Group left March Field and proceeded to Ocean Beach where they were given instructions to attack a simulated Group on the ground at the Riverside Airport. The attacking force was located by the Observation, but due to faulty radio their reports were not received in time to allow the defending Pursuit to get in the air and intercept them. That night the 2nd Bombardment Group with one squadron from the 3rd Attack Group and one squadron from the 17th Pursuit Group attached, were on the alert at 6:30 p.m. The Army mine planter was sent off Catalina Island to represent an enemy fleet. The 12th Observation Group patrolled the area around Catalina Island from 5:30-9:30 p.m. Immediately upon arrival in the area, they reported the presence of the Army fleet and the 2d Bombardment Group with attached troops were directed to attack it. Pursuit protection was used until dark and then the Pursuit returned. The attack was well carried out. Bombardment returned about 9:00 p.m.

Thursday, May 18th. The mine planter was sent to an area north of Catalina Island and the 12th Observation Group directed to patrol that area, beginning at 3:30 a.m. At about 4:00 they reported the presence of the enemy fleet and the 7th Bombardment Group with one squadron of the 3rd Attack Group and one squadron of the 17th Pursuit Group attached were directed to attack this fleet. The attack was carried off successfully. The critique following the operations brought out

the need of more direct cooperation between the Bombardment and Observation components, and the difficulty of spotting vessels on the water at night even when their approximate location was known.

Friday, May 19th. The 3rd Attack Wing was sent to Rockwell Field and there given instructions to attack an enemy air force dispersed in the Riverside area. The 8th and 17th Pursuit Groups were organized as a provisional wing and dispersed in the Riverside area. The 8th remaining at March Field and the 17th placing six camouflaged ships at Riverside and uncamouflaged ships in various other airdromes. The movement of the Attack Wing was reported by the defending Observation. The Attack Wing sent out a screen of scouts before it to locate and report all enemy airplanes on the airdromes in the given area. All planes were located and attacked except the six camouflaged planes on the Riverside Airdrome. Although various scouts inspected this airdrome, none of them located the camouflaged planes. All airdromes having uncamouflaged planes on them were located and attacked, showing plainly the value of camouflage. It was even difficult to locate the camouflaged planes in photographs taken of the field.

Due to the demands made on March Field by the Civilian Conservation Corps, it was necessary to relieve the 17th Pursuit Group from the Exercises, and they took no part in the last week's problems.

Monday, May 22nd. A demonstration was held this day, consisting of an attack on March Field, in which 3 Attack planes laid a smoke screen over the field. This was followed by an aerial review. A number of distinguished visitors were present to observe the work of the Air Force and these were later shown about the field.

Tuesday, May 23rd. This day's mission was the bombardment of an "enemy aircraft carrier," the latter being represented by two rafts towed by an Army Mine Planter. The "carrier" was located by our observation patrol, whereupon the consolidated Bombardment units and the Attack Group, convoyed by the 8th and 20th Pursuit Groups, took off from March Field to launch an attack. Two of the six Observation planes had located this "enemy" out of an area of 2,000 square miles to which the six planes had been assigned.

Each Bomber carried two 100-lb. practice bombs and each Attack plane two 50-pounders. The Attack Group, down almost on the water, attacked from the southeast to northwest; the Bombers at about 5,000 feet in the opposite direction. An unusual incident marked this attack. Although the Attack and Bombardment movements had been carefully synchronized in advance, the former encountered a severe head wind near the sea-level, from the coast line to the position 15 miles away where the "enemy" was in motion. The Attack Group, therefore, were a bit late in finishing their part of the mission and the Bombers were forced to circle out and make their attack headed toward home.

Due to the shortage of Bombing personnel (many of them on necessary duties at March Field, or absent on the Exercises at Fort Knox) to man the bomb sights on all the planes, no attempt was made at bombing accuracy; correct bombing procedure being the problem involved.

Wednesday, May 24th. Simulating conditions in which an intelligence net would scan the skies for invading Bombers and report their presence and route over certain points, the area - Pomona, San Bernardino, Perris and Fullerton was given as the objective of two Bombardment Groups, each with an Attack squadron, and the two Pursuit Groups were consolidated to defend this same area from such attack.

From March Field the two invading forces (each force of one Bombardment Group, one Attack squadron and two Observation planes) proceeded to Oceanside where they separated, one force flying to "bombard" Pomona, the other toward San Bernardino.

Although confronted with a situation which forced him to disperse his own defending Pursuit Groups, the Pursuit Commander was able to intercept one Bombardment force well before it reached its objective and the other as it prepared to bomb its particular target.

Thursday, May 25th. The 3rd Attack Wing with the 8th Pursuit and 12th Observation Groups attached, proceeded to Rockwell Field and serviced. Just as servicing was completed, they were attacked by the 7th and 2nd Bombardment Groups, acting as a provisional bombardment wing. Upon completion of the attack the provisional bombardment wing dispersed; first as two groups, then the groups into separate squadrons and the squadrons into flights returned to dispersed airdromes in the area east of March Field. The Attack Group Commander used the Observation and the 20th Pursuit Group as scouts to trail the Bombardment to their various airdromes and report the location to him. Upon receipt of information as to the location of the various Bombardment units, he dispatched the Attack Group, under protection of the 8th Pursuit Group, to attack and destroy these planes on the ground. The problem was very successfully carried out the Attack locating and destroying all but two of the two Bombardment flights. This problem showed plainly the necessity for high speed Observation with excellent radio communication. The success of the mission from the Attack standpoint was due to the excellent work of the Pursuit used as radio scouts.

Friday, May 26th. The 7th Bombardment Group with the 2nd Bombardment attached, organized into one group of four squadrons of war strength. The 8th Pursuit Group and the 20th Pursuit Group attached were organized into one group of four squadrons of war strength. The 3rd Attack Group was used to simulate the new idea of "Fighter" airplanes and was sent to accompany and protect the Bombardment which was attacked by Pursuit. Some valuable lessons were learned regarding the operation of 4-squadron groups and a certain amount of information regarding the value of "Fighters" for use in protection of Bombardment and attack by Pursuit.

The finale of the three weeks' exercises at March Field was an aerial review of the whole force, directed by the Air Commander from the air by radio.

Throughout the entire exercises, radio control was used in so far as possible. At first the Ford command plane was used as such, the Air Commander flying therein and watching the course of events, giving such orders as were necessary to the Wing Commanders. Lack of visibility from the Transport, however, made the use of his Observation plane necessary as a command plane, again proving the contention that the airplane of commerce, while satisfactory as such, is not suited for tactical purposes in the military establishment. The Transport, however, with its more powerful and varied radio equipment, was used as a relay; the Air Commander's orders for his subordinates being transmitted by him to the Transport, from whence they were re-transmitted to the commanders concerned.

There were two objectives which now lay ahead of the participants in the exercises at March Field:

1. The locale of the exercises would be shifted to the Puget Sound area in the Northwest. Lack of facilities, previously described, and a lack of funds for the purpose, however, prevented the entire Air Force organization continuing on to Seattle, and only the general staff, the unit commanders and cer-

tain members of their staff made this move.

2. The remainder of the Air Force, not going to Seattle, would of necessity return to their home bases, under the seconds-in-command. This simulated the conditions of war time operations in the flying units where the many battle casualties, transfers, etc., give the junior officers an accession to command which is not often experienced in time of peace. In this instance with the wing, group and squadron commanders and their staff detached from the body of their units to go to Seattle, these same units were commanded by junior officers who were next in rank, thus giving the latter that valuable experience which only actual command and its attendant responsibilities can bring.

THE RETURN HOME AND THE SEATTLE AREA

THE return home, it might be well to add here, was made with few untoward incidents, although several Groups encountered bad weather. The majority of temporary squadron commanders were second lieutenants, with first lieutenants or captains commanding groups or wings - a grave responsibility for officers of that rank to lead their units across the continent. Reference to the Air Force organization (pages 139 and 140) shows, however, that four Groups had been commanded by captains and eight of the squadrons by 1st lieutenants throughout the aerial trek westward and the three weeks' operations at March Field, although a group should normally be commanded by a lieut.-colonel and a squadron by a major.

The departure of the units from March Field to their home stations took place on May 27th, 28th and 29th. On the latter day the majority of the remaining personnel and airplanes (67 officers, 86 enlisted men, 57 airplanes) left March Field for the Northwest. Stops were made at Fresno, San Francisco or Oakland, Sacramento, Medford, Portland or Vancouver, to a destination at Tacoma or Seattle.

A typical schedule was that of the Air Force Headquarters, which left March Field in the morning, stopped at Fresno for lunch and at the San Francisco Bay Airport at Oakland for the night; starting the next morning for Medford, Oregon (with a brief stop at Hamilton Field on the Bay for the purpose of inspecting this new station) and after luncheon at Medford, continuing the flight to Seattle.

The 2nd Bombardment Wing contingent of 19 officers, 27 enlisted men and 14 airplanes, based at the Municipal Airport at Tacoma, with the remaining 48 officers, 59 enlisted men and 43 airplanes basing at the Boeing Airport in Seattle. Personnel at both places were billeted in local hotels.

Operations at Seattle.

The first mission in the Puget Sound area took place on May 31st. Wing, Group and Squadron Commanders and their staff officers reconnoitered the areas assigned to their units with a view to dispersed occupation of those areas during extended operations. Roughly, these areas bounded Puget Sound. The reconnaissance embraced both tactical and logistical considerations, as in the Los Angeles area during the operations at March Field.

Data concerning such landing fields had not been previously prepared for the commanders concerned, and it was a case of starting from scratch. Aerial reconnaissance only was undertaken, and it was understood that the conclusive choice of airdromes could only be made after a reconnaissance had been made on the ground of the possible areas discovered from the air. In a number of cases excellent potential airdromes were seen which needed from three days to a week's work to render them usable.

There was a vast difference in the terrain in the Northwest, as far as affording such airdromes, and the well populated area near Los Angeles where adequate airdromes are most numerous.

The following day, June 1st, certain airdromes selected by the Air Force Commander were occupied by the individual officers or small groups of individuals representing their particular units. From such occupation a rendezvous was made over Olympia upon radioed order of General Westover from his Observation airplane. A total of 46 airplanes participated in this rendezvous. The formation flew to Centralia and Chehalis, then turned and flew north to Tacoma, where several turns were made over the city, continuing on to Seattle, after which all airplanes landed at Boeing Field.

On June 2nd, a situation was assumed which necessitated a change of front towards Grays Harbor (on the Pacific Coast). The previous situation had assumed an enemy to the north, but in this one the "enemy" was approaching the coast with a view to effecting a landing at Grays Harbor. The units reconnoitered the new areas assigned them, and detailed reports were made on possible dispersed airdromes.

This was the first time that exercises of this character had been held in the Northwest. Those Air Corps officers taking part in the Exercises were impressed by several things,-

1. The difference in terrain and the possibility of dispersing in that area and in other areas with which they were familiar;

2. The strategic importance of the Northwest with its natural resources and its many harbors, and

3. The vulnerability of this highly important area to enemy attack, and the present lack of adequate air units in the area.

Return of the Staff and Unit Commanders

On Sunday, June 4th, the return home from the Northwest was begun. The majority of participants flew via Vancouver, or Portland, then up the Columbia River gorge to Pasco, thence to Boise, Salt Lake City and Cheyenne, through a "bottleneck" which offered even more difficulties than that from El Paso to March Field.

At Cheyenne, the skeleton units dispersed and returned as directly as possible to their home stations. There was no spectacular finale, or "flourish and fanfare of trumpets." A hard job was over - but an interesting job, nevertheless.

The hospitality of interested civilian organizations near March Field, at Riverside, Los Angeles, Hollywood, Fresno, Medford, Seattle and Tacoma, and at many other places en route was all that could be desired. In addition, seldom has a more intelligent interest been shown in the work of the Air Corps than by the civilians with whom members of the G.H.Q. Air Force, singly, in small groups, or as a body came into contact.

Looking back on these facts helped, in no small measure, to compensate for a return home from the cool northwest and the still cooler atmosphere over the Rockies to atmospheric conditions exactly the opposite - a hot spell which, perhaps jealous of the Air Force, was seeking to make a record of its own not at all to the liking of perspiring humanity.

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FLYING HIGH IN PURSUIT OF ELUSIVE COSMIC RAY

A final flight for the purpose of determining cosmic ray activity was completed on June 7th, when 2nd Lieut. John M. Stone, of the 95th Pursuit Squadron, March Field, Calif., went up 30,000 feet in a P-12E plane. He carried supersensitive, self-recording instruments with which Dr. Robert Millikan and his assistant, Dr. Victor Neher, of the California Institute of Technology, obtained valuable recordings.

Sergeant majors in the British Royal Air Force have been raised in rating to warrant officers.

V-6464, A.C.

KELLY FIELD TO GRADUATE ANOTHER FLYING CLASS

June 29th will be Graduation Day at Kelly Field, San Antonio, Texas, when a total of 91 students, who had undergone the year's intensive course of flying training (eight months at the Primary Flying School at Randolph Field and four months at the Advanced Flying School at Kelly Field) will receive their wings and the rating of "Airplane Pilot." Of these 91 graduating students, three are officers of the Regular Army, two are Air Corps noncommissioned officers, and 86 are civilians who pursued their training under the status of Flying Cadet.

Two of the student officer graduates, who hold commissions in the Field Artillery, will ultimately be transferred to the Air Corps. The third, 1st Lieut. Randolph P. Williams, who has been affiliated with the Lighter-than-Air branch of the Air Corps, holding the ratings of Airship Pilot and Balloon Observer, and he will join the select few among the officers in the Air Corps who hold both the ratings of Airship Pilot and Airplane Pilot.

The two Air Corps noncommissioned officers, Master Sergeant Carlton P. Smith and Technical Sergeant Frank J. Siebenaler, already hold commissions in the Reserve Corps, and they will be sent back to duty under their noncommissioned status with the organizations with which they served prior to their assignment as flying students. The civilians who trained under Flying Cadet status will be commissioned in the Air Reserve as 2nd Lieutenants and, in all likelihood, will be placed on extended active duty with Air Corps organizations.

Seven members of this graduating class have been initiated into the mythical but well known society among airmen who used their parachute in the extreme emergency and which is known as the "Caterpillar Club," namely: Flying Cadets William M. Altenburg, Edwin D. Avary, Homer A. Boushey, Jr., Lawrence S. Fulwider, Philip B. Klein, George F. McDermott and Tech. Sgt. Siebenaler. The latter made an emergency parachute jump on November 14, 1928, while the Cadets went through that initiation while undergoing their flying training.

Lieut. Williams is graduating as an Observation Pilot, 2nd Lieuts. John E. Barr and Joseph B. Zimmerman as Pursuit Pilots, Master Sergeant Smith and Tech. Sergeant Siebenaler as Bombardment Pilots.

The Flying Cadet graduates are listed below, as follows:

Attack Pilots

James Thomas Connally	Waco, Texas
William Silver Edgar	Waco, Texas
Jean Donat Grenier	Manchester, N.H.
Andrew Monroe Wynne, Jr.	Merigold, Miss.

Bombardment Pilots

Howard Owen Aigeltinger	York, Pa.
Joe Earle Barton	Greenville, S. C.
Henry Stoner Bear	Carlisle, Pa.
Richard C.W. Booker	Phoebus, Va.
George Kenneth Crain	Birmingham, Ala.
Joel Lee Crouch	Moorhead, Minn.
Harold Lucas Dietz	Bangor, Pa.
James Young Eastham	Huntsville, Texas
Ladson Green Eskridge, Jr.	Newberry, S.C.
Elwyn Herbert Gibbon	Seattle, Wash.
Charles Lee Hamilton	Rison, Ark.
Stanley C. Hoyt	Plaistow, N.H.
John Sioussa Lambie, Jr.	Birmingham, Mich.
Beirne Lay, Jr.	Charlottesville, Va.
Sterling Talley Love	Lubbock, Texas
Millard Ray Newland	Cedar Springs, Va.
Franklin Kendall Paul	Marriottsville, Md.
Francis Pope	New York City
Bernard Adolf Schriever	San Antonio, Texas
Elmer Patrick Schwarz	Little Rock, Ark.
John Dodds Treher	Hueneme, Calif.

Observation Pilots

Martin Ansel Bateman	Camden, S.C.
Clyde Paul Brandenberger	Cornell, Calif.
Howard Alton Cheney	Springfield, Mass.
DRoss Ellis	Stillwater, Okla.
Albert Vandenburgh Endress	Austin, Texas
Charles Edward Flaherty	Barrowsville, Mass.
Lawrence Scott Fulwider	Bloomington, Ind.
Cyril Adrian Goyette	Mystic, Conn.
Harold Austin Gunn	Nunn, Colo.
Elkins Hamilton Hale	Washington, D.C.
Kermit Arpad Harcos	Los Angeles, Calif.
Eyvind Holtermann	San Francisco, Calif.
Daniel Edwin Hooks	Iowa Park, Texas
Harold Lewis Jones	Bath, Pa.
George Henry Macintyre	Berkeley, Calif.
George Francis McDermott	Pittsburgh, Pa.
Joseph Caruthers Moore	Scooba, Miss.
William Stephen Pocock, Jr.	New York City
Raymond Walter Wells	New York City
Raymond Alfred Young, Jr.	Charlotte, N.C.

Pursuit Pilots

Edward Schwartz Allee	Boston, Mass.
Wm. Montgomery Altenburg	Cape Cottage, Maine
William Thomas Arthur	Omaha, Neb.
Edwin Davis Avary	Oakland, Calif.
Lloyd Herbert Bidwell	Stevens Point, Wis.
Homer Astley Boushey, Jr.	New York City
Willard Van Deman Brown	Atlanta, Ga.
Newton Hunt Crumley	Elko, Nevada
Don Orville Darrow	Bremerton, Wash.
John Francis Davidson	Atlanta, Ga.
Walter Edward Davis	Fort Worth, Texas
Donald Bream Diehl	Norfolk, Va.
John Patrick Donlin	San Francisco, Calif.
Edward Rowe Dorsey, Jr.	San Francisco, Calif.
Samuel Cleveland Dunlap	Gainesville, Ga.
Frank Howard Evans	Tucson, Ariz.
Thomas James Gaughen, Jr.	North Bend, Neb.
Jay Lanham Gentry	Decatur, Texas
John Holden Gibson	Olney, Ill.
Hal Willoughby Gregory, Jr.	Atlanta, Ga.
Lowell Everett Heacock	Canoga Park, Calif.
Charles Phillip Hollstein	Jacksonville, Fla.
James H.C. Houston	Baltimore, Md.
Wm. Thomas Hudnell, Jr.	Washington, N.C.
Philip Beeton Klein	Oklahoma City, Okla.
Roger Herman Kruse	St. Louis, Mo.
James Britt League, Jr.	Greenville, S.C.
Charles Dean Manhart	Evansville, Ind.
Jeff Coleman Mock	Hillsboro, Texas
Ray Albert Noland	Walla Walla, Wash.
Herman Gustave Portman, Jr.	Amherst, Ohio
Thomas Jones Schofield	Pittsburgh, Pa.
Everett Greeley Senter	Denver, Colo.
Hamilton Smith, IV.	Detroit, Mich.
John Franklin Strickler, Jr.	Detroit, Mich.
James Edwin Stroud	Washington, D.C.
Edwin Averell Warren	Detroit, Mich.
Daniel William Wickland	Glendale, Calif.
James Winfield Williams	Hillsville, Pa.
Edgar Milton Wittan	Portage, Pa.
George Wm. Youngerman, III	East Haven, Conn.

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LIEUT. HARRIS VISITS WRIGHT FIELD

An exceedingly welcome visitor at Wright Field, Dayton, Ohio, recently, was Harold R. Harris, of the Pan-American Grace Airways, Lima, Peru. Some years ago Lieut. Harris was Chief Test Pilot at McCook Field, Dayton.

Lieut. Harris bears the distinction of being the first flier in the United States to make an emergency parachute jump from a disabled airplane in flight. He made this life-saving jump on October 20, 1922, nearly 11 years ago, near McCook Field, due to structural failure of the aileron of the plane he was flight testing.

It was shortly following his jump that the so called "Caterpillar Club" was organized.

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Major Robert L. Walsh left Wright Field for Washington on May 26th for conference with the Chief of the Air Corps. His duty at the field ended June 5th when, to the regret of his many friends, he left for his new duties in the Canal Zone. He sailed on June 16th.

MARCH CLASS PROGRESSES RAPIDLY

By the News Letter Correspondent

The March class of 1933 is rapidly nearing the completion of its primary training period, consisting of approximately four months of ground school and flying training on the line, and I am sure that not one of the class regrets in the least having been given the opportunity of attending the greatest flying school in the world here at Randolph Field.

There have been many weary hours of pondering over some of the com;licated and seemingly impossible problems in Theory of Flight, or perhaps over how many "Dits" make a "Dah," but all in all the instruction in ground school and on the flying line has already proven itself absolutely essential in every respect to the prospective military pilot.

The second week in March found the class working hard at Theory of Flight, Personal Equipment of the Military Pilot, and Buzzer. Briefly, Theory of Flight deals with the more technical and theoretical phases of flying, for instance, why a plane will fly, what keeps it up, and methods of construction and design which will make the plane stable and efficient for the task it has to do. Personal Equipment of the Pilot deals with the history of development, construction, methods of folding and practice of handling and using the flyer's real friend in case of emergency, the parachute. The class in Buzzer which runs practically thruout the primary and basic course ground school training has been the bane of a cadet's existence to many, but with time each little "Dit" and each little "Dah" finds itself meaning more than just that to the average cadet.

Following the short Personal Equipment course, the Engines course was started and took up the theory of why our airplanes run, what conditions best suit efficient and reliable operation of motors in military ships, and a study of the accessory parts of the airplane motor. Following a theoretical study of engines, the class went to the engines laboratory and found out, by actually tearing down and putting together of the component parts of the motor, just how it worked, what could go wrong with it and what to do after the trouble had developed. The final three weeks of this course is being spent in actual trouble shooting in the engine block laboratory.

The last of the ground school courses to be taken up is that of Ground Gunnery, which deals with the airplane armament, or as it is better referred to, as "The teeth of the military pilot." In this course the class has learned what kind of guns are mounted on our fighting ships and how they are constructed, and how to take apart and put together these rapid fire guns, so that in case of emergency the pilot will be able to fix minor troubles so that the gun may be kept in operation.

Over on the flying line where the attention of every flying cadet is centered thruout the entire course and where there is no end to new things to be learned and thrilling moments in learning how to fly, things are beginning to take on the appearance of a group of circus performers practicing their acts.

Back in the early flying days of the present March class, at the end of five and one-half or six hours dual flying instruction, the first proud cadets came back to the barracks wearing a broad smile, which told in itself of a solo flight that morning. Every day more joined the ranks of the soloii and, by the end of twelve hours dual flight, most of the class had achieved that first little success in the life of a flying cadet. It was from this time on that the real work began. The following time in the air was not to be spent in learning very fundamental maneuvering with the instructor always there to help in case something went radically wrong, but the test of taking the ship aloft alone and practicing maneuvers, picking out the mistakes alone and correcting for them had come. So much progress had to be made in a given time and if it were not done, a check ride or two and the big opportunity no longer presented itself.

With the exception of a few minor mishaps due to bad taxiing near the hangars, the March class has been free from accidents of any kind, but so far has waged the customary war on shock cords by breaking its share. There have been three forced landings on "A" stage so far, two due to gasoline shortage and one due to a broken propeller, in which cases all ships were brought to a good landing.

A resume of the flying training as it has progressed on the line since the first day is as follows: Familiarizing oneself with the controls and instructions in how to use the controls and the instruments that are provided, the first flight with the instructor and instruction in taxiing the ship about the field, a demonstration of how traffic around the field runs and how it should be left and entered, and an explanation of the wind direction or traffic "T" and how the different rectangles of traffic lie about the field at different settings of the "T."

After fundamental instructions on how to get into and out of the landing field, the first big thrill came with a chance at the controls during level flight to see just how the movement of each effects the flight of the plane. From this time on the new things were given fast and level flight, turns and banks, climbing turns, forced landings and take-offs, gliding turns and stalls followed. After this came elementary eights on cross roads, around points and pylon eights for accuracy work, followed by spins, spirals, chandelles, 360 degree and 180 degree landings, 360 degree steep banks and lazy eights.

At present the majority of the class are on the acrobatic stage and are working hard to perfect loops, half rolls, reversements, slow and snap rolls and Immelman turns. During the past week each flight has had a half or three-quarters of an hour dual instruction transition work per student. Those who have been flying PT-3's have been given some time on the PT-11 ship, and vice-versa. This transition work has served to make a pleasant variation and change in the regular grind as well as to give each student a chance to get acquainted with and fly another type of ship than that in which he has been accustomed to. Up to the present writing, the stage average per man total time in the air is 48:12, the average dual time is 25:42 and the average solo time 22:30.

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DODO PEP SONG

By P.B. Wilson

(Tune: Mr. Gallagher and Mr. Shean)

Oh Mr. Gallagher!
Oh Mr. Gallagher!
Have you seen this classy bunch of Dodos
here, here, here?
In their uniform so neat,
Just to see them is a treat,
And they're always bubbling over with
good cheer -

Oh Mr. Shean!
Oh Mr. Shean!
They're the keenest bunch of boys I've
ever seen,
If you think these boys are lazy,
You're half nutty if not crazy,
Are they eager Mr. Gallagher?
Absolutely Mr. Shean.

DISTINGUISHED FLYING CROSS TO CAPT. BRUNER

ANNOUNCEMENT was made by the War Department recently of the award of the Distinguished Flying Cross to Captain Donald L. Bruner, Air Corps, the citation being as follows:

"Donald L. Bruner, Captain, Air Corps, United States Army. For extraordinary achievement while participating in aerial flights. By his vision, initiative, courage and perseverance, Captain Bruner rendered exceptionally valuable service to the Government of the United States by developing and perfecting night-flying equipment, thus making it possible for military and commercial airplanes to traverse the length and breadth of the United States during the hours of darkness."

Under date of April 4, 1933, the Chief of the Air Corps sent the following letter of commendation to Captain Bruner:

"1. The Chief of the Materiel Division, Wright Field, Ohio, has brought to my attention your achievements in connection with the development of night flying equipment while you were on duty at that station and at McCook Field, Ohio.

"2. The records show that from 1919 to 1926 you flew for 500 hours at night, in the course of testing and developing night flying equipment on airplanes and on the ground. Your night flying during that period was extremely hazardous, due to the fact that the equipment had not been developed to the point wherein the requirements for reasonable safety had been met.

"3. The records further show that you invented the first revolving beacon and that your experiments led to the development of the present revolving beacons used by the Department of Commerce, that you also invented the first airplane-carried electric landing lights and were directly responsible for the development of the present standard units which are built into the leading edge of airplanes.

"4. The establishment, in 1922, of the first night operated Army airway, called the "Night Flying Laboratory," between Dayton and Columbus, Ohio, is credited to you. The night air mail service was a direct result of this work. Between the dates July 2, 1923 and August 13,1933, you conducted and personally participated in the first airway actually operated for a considerable length of time, on schedule in the world.

"5. The following extract from the report of those associated with you in your work at Wright Field is worthy of quotation:

'. . . . in 1931 Lieutenant Bruner performed probably the most hazardous flight missions of the whole series of tests of night flying equipment. A flashing arc beacon * * * was believed to be capable of illuminating clouds and fog intermittently by momentary flashes of extremely high candle power so that the light could be seen through fog by a pilot flying in or above it. * * * Obviously, this beacon could not be tested under any conditions except the storm conditions for which it was designed. Lieutenant Bruner voluntarily flew on selected nights when there were fog, low-hanging clouds and heavy rain. He even flew blind in the clouds in his efforts to determine the fog penetration of this special beacon.'

Having developed night flying equipment or ordinary peace-time operations to a quite satisfactory point, Lieutenant Bruner culminated his work by devising and testing secret portable lighting equipment for unprepared airdromes such as would be needed in war-time operations.'

It gives me great personal and official pleasure to commend you herewith for these signal achievements, and to express, on behalf of the entire Air Corps, our sincere appreciation of all that you have done to develop and make safe the flying of airplanes by night."

RESOURCEFUL CITIZENS AT BASTROP, TEXAS

The town of Bastrop in the Lone Star State is probably very little known to the citizens of this country, but two Army flyers will have occasion to remember it for the remainder of their days. The motorists of that town certainly displayed rare judgment on the night of May 13th and utilized the headlights of their motor cars to very good advantage when these two airmen, during a night flying mission from Barksdale Field, Shreveport, La., to Randolph Field, Texas, found it necessary to make a forced landing due to very poor visibility.

These two officers, Lieuts. J.T. Meyer, pilot, and M.M. Goldberg, Observer, reported the following story

Due to the poor visibility that night, they had been driven down to a low altitude, with practically no visibility in a horizontal direction, making it necessary to fly by instruments, which is a dangerous practice at a low altitude. They had attempted to make a landing by using the two flares with which their airplane was equipped for night flying. Due to the low altitude, these flares struck the ground and went out before they could make a landing in the field selected. They were rendered helpless by this circumstance so far as illuminating a field for effecting an emergency landing was concerned and their lives were endangered, as it was very difficult for them to prevent a crash if they continued in this poor visibility. They circled Bastrop three times, trying to decide whether they would be forced to use their parachutes, when they noticed automobiles lining up in a field in which they could effect a landing. This made it possible for them to land safely, saving their airplane and possible injury to themselves.

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INSTRUMENT FLYING AT CHANUTE FIELD

In accordance with a recent directive from the Chief of the Air Corps, providing that all pilots will receive a uniform ten-hour course of instrument flying, a rigorous program of instrument flight instruction was instituted at Chanute Field, Rantoul, Ill., by Lieut-Col. James A. Mars, Commanding Officer of the station. Chanute Field has been fortunate in having this year, as a student, Lieut. Elmer J. Rogers, Air Corps, a former instructor in instrument flying at Randolph Field, Texas. Shortly after the new directive was received, all pilots of Chanute Field were assembled and were addressed by Lieut. Rogers in an interesting two-hour lecture on the intricacies of the subject. At once, a school for instrument flying was established, with Lieut. Rogers as Instructor and Lieuts. R.V. Williams, F.E. Cheatle and R.M. Kraft as students. On May 22nd, these three officers completed the course of instruction and were graduated as Instrument Flying Instructors. They will, beginning at once, engage in an intensive program of instruction for other pilots of Chanute Field.

Testifying to the fact that Lieut. Rogers practices what he preaches, our Correspondent from the 113th Obs. Squadron, Indiana National Guard, writes us as follows:

"It was also our privilege to hear another splendid lecture by Lt. Rogers from Chanute on Instrument Flying. He gave us a very complete demonstration and talk on the use of the instruments in this type of flying, which has been very helpful to us in our flying since then. After the lecture, Lt. Rogers, and Lt. Carpenter of our Squadron took off for a night trip back to Chanute Field. They received a favorable weather report between Stout and Chanute fields, but after flying for some

time they encountered low ceiling and Lt. Rogers was forced to pull up into the soup. After flying totally blind in a dense mist and rain for 45 minutes, they came out with a ceiling of 800 feet and were still exactly on their course. Lt. Rogers, according to Lt. Carpenter, certainly practices what he preaches and knows what he is talking about when relying only upon his instruments. Thanks also to Lt. Rogers; we were indeed fortunate to listen to such an instructive lecture by such a well informed officer.

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AERIAL GUNNERY BY 91st OBSERVATION SQUADRON

The gunnery exercises recently held by the 91st Observation Squadron, Air Corps, Crissy Field, Calif., proved highly successful, despite the lack of facilities for all-year practice. The ground firing and bombing was done across the Bay at the new Hamilton Field. Tow target firing was conducted over the ocean off the Golden Gate. All personnel were ferried to and from Hamilton Field by air daily. Qualifications attained by the 13 pilots who completed the course were as follows:

Expert Aerial Gunner: Major Donald P. Muse, Captain John E. Upston, 2nd Lieuts. Smith, Titus, Northrup, Lindsay, Ball and Beck.

Aerial Sharpshooter: Captain H.W. Prosser, 2nd Lieuts. Clinch, Moody, Bell and Master Sgt. Stockwell.

An average score of 806 was obtained.

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AIRPLANE RESCUE DRILL IN HAWAII

The Air Corps recently held an airplane rescue drill for the civilian population of the Hawaiian Islands, when a "hot tip" was received in the office of the Air Officer of the Hawaiian Department that an airplane had suddenly burst into flames and dropped into the sea off Koko Head. At the time all airplanes assigned to Luke Field were in the air on a mission being conducted by the Commanding Officer of the 18th Composite Wing. The U.S. Coast Guard Cutter ITASCA, the Young Brothers tug, MAMO, a speedboat owned by Mr. K. Sumida and rescue planes from Luke and Wheeler Fields were immediately dispatched to the spot where the accident was reported to have taken place. In the meantime, all means of communications were being utilized to check up on all Army, Navy and commercial planes in the Islands to ascertain if any were missing. After all planes on the Islands had been "checked in" and found intact, rescue craft were informed by radio that there was no need for further search. It was believed that the alarm was caused by the accidental release of a flare from a plane which was among those of the Group on the mission above referred to.

Had there really been an accident, the prompt work of the surface craft would have been invaluable as the seas were too rough to permit the landing of amphibian airplanes. The prompt action of all rescue agencies was most gratifying, and the knowledge that efficient service is available is of great value to the morale of our seagoing pilots of the 18th Composite Wing.

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HEAVY RAINSTORM FLOODS CHANUTE FIELD

On the night of May 10th, Chanute Field and its environs were visited by a rainstorm of cloudburst proportions, which resulted in a great amount of damage to personal property of military personnel, as well as causing much discomfort.

Meteorological reports show that 4.40 inches of rain fell within a few hours in the night, accompanied by high winds. Due to the lack of natural drainage and to inadequate central drainage systems, practically all basement storage spaces of officers and noncommissioned officers in the village of Rantoul were flooded with water varying in height from 3 to 4 feet, ruining property such as trunks of summer clothing, spare furniture, bedding, equipment, and other articles stored in basements. Individuals have reported damage varying from $25.00 to as much as $300.00 which, when collectively considered, reaches a figure of several thousand dollars.

Added to the actual property damage were the inconveniences and discomforts of finding plumbing appliances unusuable, furnaces entirely out of commission, leaving families exposed to the raw cold moisture saturated air, with a resultant increasing sick rate. Bathroom fixtures at Chanute Field, because of insufficient drainage of the location, could not be used for two days.

Those members of the command living in other communities were temporarily cut off from Chanute Field by sizable lakes which submerged the main highways, both north and south, to a depth of over two feet. These lakes were finally forded successfully, after fan belts had been removed, batteries raised beyond the danger level, and oil filler caps plugged against the entrance of water, automobile pilots using dead reckoning, "feel," and even the dictates of blind flying, to remain on the strip of concrete highway two feet below the surface. This transportation condition continued for five days.

The flying field was temporarily a lake, the surface of which, when whipped by the wind, actually showed whitecaps. In spite of the continual and strenuous efforts to keep the worn out war-time buildings of Chanute Field water tight, officers and men found barracks, offices and laboratories liberally scattered with pools of water.

This is the third flood of serious and damaging proportions at Chanute Field in the last three years, as two previous inundations occurred in 1931.

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DISASTROUS CONSEQUENCES OF SMALL FIRE

Crissy Field, Presidio of San Francisco, Calif., was recently visited by misfortune in the form of a fire. An electric gasoline pump apparently developed a small leak while in operation and ignited. The material damage was confined to the pumphouse itself, but five men were burned about the face and hands when the blaze, apparently subdued, flared up and caught those nearby. All suffered very painful burns but none will be permanently disabled.

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ARMY PAIR WIN IN PIGEON RACE

Two Scott Field homers, Miss Erhardt and Mrs. Roosevelt, representing the Belleville Racing Pigeon Club, turned in a third consecutive victory for the local club over the St. Louis Championship Club in a 300-mile race flown recently from Newport, Ark.

The two birds, trained by Harry Meyer, pigeoneer at the Army post, flew together to win first and second in a wonderfully flown race. The average speed of the two birds was 1211.87 yards per minute. Third place went to B. Boatmen, of St. Louis, 1118.91 yards per minute, and fourth to the Huegler & Gotch loft, of St. Louis, 1118.24 yards per minute. Scott Field birds have flown to 3 victories over distances of 100, 150 and 200 miles, and are believed to have set an Army record in winning three consecutive flights over these distances. The birds are descended from World War birds, such as Spike, which carried 50 messages in the war; Pres. Wilson, whose leg and breast was shot away, and Mocker, a bird that lost an eye in the war.

COMPARISON OF RECENT FOREIGN AND AMERICAN MILITARY AIRCRAFT ENGINES

FOREIGN countries have produced remarkable results in the development of racing type liquid-cooled engines, while in the United States manufacturers have succeeded in developing air-cooled engines of higher horsepower and greater variety than those of foreign countries, states an Air Corps Technical Report, recently issued by the Materiel Division, Wright Field, Ohio. In elaboration of this interesting comparison, the report goes on to say:

As a result of this intensive work on large liquid-cooled engines in Europe, the larger foreign powers all have liquid-cooled engines which exceed those of the United States in horsepower. In other characteristics, American liquid-cooled engines compare favorably with foreign engines. Only American liquid-cooled engines are using high temperature coolants, although other countries, particularly England, are developing evaporative cooling systems.

A study of the characteristics of air-cooled engines shows a greater variety of these engines in the United States, with lower specific weights, smaller specific displacements, higher B.M.E.P. and higher compression ratios than those of comparative horsepower developed in foreign countries. At the same time, manufacturers in the United States have succeeded in developing air-cooled engines which deliver higher horsepowers than engines developed in foreign countries.

The engines under discussion in this report were chosen as those representative of the latest development in foreign countries. Only engines of sufficient power for military use were considered, which eliminated most of the engines developing less than 500 h.p. All the foreign engines taken under consideration were not known to have passed the type tests required by the various countries in which they were developed, but most of those from the United States had passed these tests.

A certain variation in these type tests is interesting. Former type tests in the United States called for 56 hours of operation at rated power and speed and 44 hours of operation at part throttle. Several of the American engines discussed have completed the present type test which requires 67½ hours of full operation and 81½ hours of part throttle operation. The French type test calls for 4 hours of full power operation at rated speed and 100½ hours of operation at part throttle. The British type test calls for 56 hours of full power operation at rated speed and 44 hours' operation at part throttle. The Italian type test requires 1 hour and 35 minutes full power operation at rated speed and 152 hours of operation at part throttle.

There is at the present time no known practical service type of engines operating at 1000 h.p. or more anywhere in the world, with the possible exception of the British Rolls-Royce and Italian Hispano-Suiza 18 Sb, of which a few have been constructed, but extensive development work is being done on this type of engine. The chief racing engines listed for comparison in this report are the Rolls-Royce 1931 Racer (British) with a maximum rating of 2300 b.h.p. at 3200 r.p.m. at sea level; Napier "Lion" VII B Racer (British) with maximum rating of 875 b.h.p. at 3300 r.p.m. at sea level; Renault 12 Ncr 1931 Racer (French) with a maximum rating of 1972 b.h.p. at 4000 r.p.m.; the Farman 1931 Racer 18 T (French) with maximum rating of 1460 b.h.p. at 3700 r.p.m. at an altitude of 3610 feet; Fiat 1931 Schneider Cup A-S-6 (Italian) with maximum rating of 2800 b.h.p. at 3200 r.p.m. at sea level.

In making a comparison of service engines, the racing type engines, because they were developed expressly for racing purposes and are lacking in endurance characteristics essential to service use, were not considered. These engines were included only because they represent the ultimate in design with the present knowledge of design and the materials in use for engine construction. Safety factors are cut to a minimum to produce these results, and the materials will not long stand the stresses to which they are subjected.

Comparison of Liquid-Cooled Engines

One of the most important factors to be considered in the design of aviation engines is the specific weight or weight per brake horsepower. This value should be as low as it is possible to make it and is dependent upon the excellence of engine design and the materials used in construction.

The brake mean effective pressure is that average pressure on the piston which would produce the work equivalent of the brake horsepower and is primarily dependent upon the amount of supercharging to which the engine is subjected, upon the design of the engine and upon the quality of the fuel used. A determining factor lies in the anti-knock value of the fuel available, since, other factors being equal, a high B.M.E.P. is possible only with high anti-knock fuels.

Specific displacement is obtained by dividing the volume in cubic inches swept in the working stroke of the pistons of the engine by the horsepower developed. A small specific displacement is indicative of high horsepower in a small bulk. Investigations indicate that the American engines are equal to or superior to other engines in this respect. An exception to this is the Curtiss-Wright V-1750-F, which has a greater specific displacement than the Fiat A.30-R.

A small stroke-bore ratio usually indicates a low engine and, therefore, a small crankcase. This is a valuable characteristic, since it tends to decrease the drag of the airplane. The Curtiss-Wright V-1570-F engine is exceeded in this respect by the Isotta-Fraschini "Assd" 500-R, the Fiat A.30-R, and the Hispano-Suiza 12 Nb. Other American engines are equal to or superior to foreign engines in the same horsepower class.

The compression ratio of the Curtiss-Wright V-1570-F engine is less than that of the Isotta-Fraschini "Assd" 500-R and the Fiat A.30-R, but other American engines have higher compression ratios than comparable foreign engines. Compression ratios are usually limited by the fuels available and also by the supercharging used. Higher compression ratios tend to increase fuel economy and to promote better cooling, provided detonation is suppressed.

A comparison of the crankshaft speeds and propeller speeds of the various engines shows that there is a decided tendency toward higher engine speeds and the use of gears to reduce the propeller speed. Higher engine speeds give greater power without increasing the bore or stroke of the engine if the brake mean effective pressure does not fall off faster than the speed increases. In general, the American engines are being run at the higher speeds. However, the speed of the Curtiss-Wright V-1570-F engine is lower than that of either the Fiat A-30 R, the Rolls-Royce "Kestrel" IIS, or the Hispano-Suiza Xbrs.

The weights generally given for the liquid cooled engines do not include the weight of the radiators or coolant which must be used. This weight is considerable and usually increases the specific weight of liquid-cooled engines above the values usually found for air-cooled engines.

High temperature cooling has been subjected to much investigation in the United States, and by the use of Prestone circulating at 250° F. to 300° F. the radiator area has been reduced to approximately 60 percent

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of that necessary for water cooling. This not only decreases the total weight of the installed engine, but also effects an increase in fuel economy and substantially reduces the drag of the airplane. High temperature cooling has been neglected in Europe, with the exception of some rather extensive investigation in evaporative cooling in Great Britain and Germany.

The development of liquid-cooled engines in the United States has been delayed, because of the lack of demand for this type of engine in commercial fields.

Comparison of Air-Cooled Engines

Air-cooled engines found early approval from commercial concerns in the United States, and the development of this type engine has reached limits in America beyond anything developed in foreign countries, the Americans excelling in the horsepower developed and in specific weight. The Italian "Asso Caccia" engine has a higher B.M.E.P. and a lower specific displacement than have the higher powered American engines. However, the relative performance of this engine is not particularly remarkable when it is considered that it is low powered, has a high specific weight, and has a smaller total displacement than any other air-cooled engine listed. American engines operate at higher speeds and have lower stroke-bore ratios and higher compression ratios than engines of other countries.

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SIDE LIGHTS ON THE WEST COAST MANEUVERS

The 77th Pursuit Squadron, Barksdale Field, Shreveport, La., recently returned from the West Coast Maneuvers. Here is what the News Letter Correspondent of that organization has to say regarding this get-together of Air Corps tactical organizations:

"Home again; and what a good feeling to 'dismount' after a trip from Tucson to Barksdale in one day. The personnel of the post turned out a welcoming reception for us at the line, and the embracing, etc., was simply 'scandalous' at least to a staid old bachelor like me.

All in all, the maneuvers were very successful. No accidents occurred during the period of actual maneuvers, although we were not so fortunate enroute. Daily critiques were held, at which all officers were welcome. Hence, the lowest ranking lieutenant was afforded the opportunity to hear a decision of the results each day. No definite decisions as to 'who won' were given out, so each man could form his own opinion.

Thanks to Major Tinker, our living conditions at March Field were made as pleasant as possible. With more than 300 officers to house and care for, one can imagine the difficulties encountered. However, all pilots were appreciative of the situation, and there was a minimum of gripes.

Prejudiced as I am, I would laud California to the skies - but, of course, there are always two sides to every question. The first week there we encountered some pretty chilly weather- so chilly, in fact, that California stock fell off several points on our exchange. The next two weeks were much more typical, and I believe no one could object a great deal to such weather conditions. Then, too, we were gradually becoming acclimated and acquainted - two factors which make for satisfaction anywhere.

So again we say 'thanks' to March Field for its excellent work as host. And may I say that the site for maneuvers was well chosen.

A vote of thanks is also due to the people of Tucson, who gave us a splendid reception. Particular thanks to Major Foye and Mr. Proctor, of the Pioneer Hotel, who did much to make our stay there most pleasant.

And so, back again in our old haunts, we resume the routine of duty. The sweat of the day is compensated for by the beauties of the night (ramblings of a feeble mind). Adios, buenos dios, Hasta la vista, mucho dinero to you. (Just to prove we've been to the border).

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LIEUT. JACKSON LOSES HIS LIFE IN CRASH

Second Lieut. Edmund Lybrand Jackson's brief career in the U.S. Army Air Corps was brought to an abrupt halt as death claimed the youthful 22-year old Reserve officer of Langley Field, Va.

While participating in machine gun practice about nine o'clock, June 20th, the P-12 ship which he was piloting dove into the ground on Plum Tree Island. Death was instantaneous as his mates rushed to the scene of the fatal accident.

Lieut. Jackson was born in Wagener, S.C. He graduated from Citadel College in Charleston, S.C., completing four years' training with the R.O.T.C. Entering the Primary Flying School at Brooks Field, Texas, June 1, 1931, he was captain of his class. He graduated with high honors from the Advanced Flying School, Kelly Field, Texas, in the June, 1932, class, where he was awarded his "Wings." Reporting to Langley Field on June 29th, he was assigned to the 33rd Pursuit Squadron for duty, and was designated as Asst. Supply Officer. Lieut. Jackson had but ten more days to serve on active duty before returning to civil life.

He is survived by his widow, a bride of a few months, and his father and mother. The remains were sent to his home in Wagener, S.C., following funeral services which were held in the St. John's Church, Hampton, Va., June 21st.

Congressman Hampton P. Fulmer, of South Carolina, an uncle of the deceased, came to Langley Field from Washington upon being notified of the accident.

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THE TC-13 AIRSHIP

The Army's new non-rigid airship, the TC-13, was recently delivered to Langley Field, where extensive tests are under way to determine its performance, which will become the basis for still further service testing in connection with coastal patrol duty for which it is primarily intended. The general performance thus far has been highly satisfactory, and the high speed has exceeded the design requirement by about 10 percent. A portable type mooring mast has also been delivered to Langley Field for use in connection with the operations of the ship. The sub-cloud car, which can be lowered below the airship carproper for special forms of observation work, is now available but will not be used until ground tests on the windlass equipment for raising and lowering this car have been completed. Development of a water ballast pick-up device, by means of which water can be picked up from the ocean to compensate for the weight of fuel consumed, is now under way.

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DRAMATIC CLUB ORGANIZED AT BARKSDALE FIELD

On June 8th an organization was born with the name of Barksdale Dramatic Club. Lieut. Caldara has agreed to act as adviser and the Club promises to be a great success. Pvt. J.A. Williams, Hq. 20th Pursuit Group, was elected President, and O.M. Myers, 79th Pursuit Sqdn., Vice President. The Secretary and Treasurer's office is held by R.B. Bannerman, 71st Service Sqdn., who is assist-

ed by L.D. Reese, also of the 71st. There are about 25 charter members, and work on a three-act comedy will begin shortly. At a later date the formation of the Barksdale Field Enlisted Men's Club will get under way, and it is believed that the two clubs will consolidate.

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REFORESTATION CONDITIONS AT MARCH FIELD ENDS

With the passing of about 7,000 enrollees in the Civilian Conservation Corps through March Field, the first phase of the work of Army personnel at the field cooperating in the President's Reforestation program has been completed. Flying has been at a low ebb while the intensive work of conditioning the youths in the forest army has been in progress.

The job of supplying all these men in the 25 scattered camps has only begun. Already unprecedented problems have been encountered. In the fitting of shoes, for instance, the requirements of C.C.C. members exceeded the regular issue of the army at both extremes. Sgt. Killingsworth, in charge of issuing supplies, says this about the shoe situation: "Imagine our embarrassment when we had ten calls for size 14 and numerous calls for size 4. All we could do was insist on each boy wearing his own shoes until special requisition could be sent forward, filled and returned. For the most part we were able to fit all comers, but I was completely stumped when a young man, 6'11" tall, came through the line for clothes." Normally, most of the shoes issued in the past have been sizes D and E. With the young men of the C.C.C., however, the average foot was width EE, probably due to the extensive use of tennis shoes."

Thirty day supplies of food are handled at the March Field Commissary for the army of forest workers. There are 25 camps and approximately 7,000 C.C.C's in the March Field District. An idea of the enormous supply of food stuffs can be obtained by a glance at a few items found on one requisition pad of Lieut. James E. Briggs and Warrant Officer Clarence Ulrey. Here is the thirty day supply: (amount in tons) 40 sugar, 21 beans, 10 bacon, 6 fresh beef, 90 potatoes, 16 coffee, 60 flour, 20 hams, 6 lard, 6 salt; also, 12,000 6-lb. cans of tomatoes and 36,000 1-lb. cans of milk.

The Photo Section of March Field is making a series of pictures depicting life with the Civilian Conservation Corps. A series were taken at March Field while the conditioning camp was going full blast, and the work will continue with pictures taken at the various mountain camps. The series will cover every phase of work, such as K.P., bunk fatigue, sports, working with brush hooks and medical inspection.

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RADIOING BY THE INDIANA NATIONAL GUARD SQDN.

The Squadron officers' class, 113th Observation Squadron, Indiana National Guard, has a rather unique piece of equipment in itz buzzer training table, which consists of twelve individual stalls containing a key and headphones, and a central control station which, by virtue of its system of switches, can establish one large radio net or several smaller ones. Any stall or key may be connected up with any other, so that practice may be had between any two stations, or several stations, or they all may work together as a large controlled net. It is a splendid device for practice and training in radio net procedure as well as regular code practice. The Communications Section under Lt. Zartman and Lt. Brown built and installed the table.

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Lady Grace Drummond Hay was an interested visitor at the Materiel Division, Wright Field, on May 16th.

WEST POINTERS IN TRAINING AT LANGLEY FIELD

TWO hundred and seventy Cadets of the Class of 1934 of the United States Military Academy, under the direct command of Lieut.-Col. Sandeford Jarman, C.A.C., arrived by Army Transport CHATEAU THIERRY from West Point, N.Y., on June 15th. Upon their arrival at Fortress Monroe, Va., at 8:00 a.m., the Cadets were divided into three detachments, the first to remain at the Coast Artillery School for instruction in theoretical and practical Anti-Aircraft and Railway gun-fire; the second to be transported to Langley Field via motor, where instruction in aviation and Air Corps tactics was given, and the third group to Fort Bragg, N.C., where the annual firing of Field Artillery weapons was conducted. Each Thursday the groups rotated, so as to give each of the 270 students a week at each of the three Army Posts.

Major Wm. O. Butler was designated by the Post Commander as the officer-in-charge, with Lieut. R.E. Nugent as Assistant. Other officers appointed on temporary duty during the stay of the Cadets included Lieuts. W.J. Paul, Supply, Transportation and Mess Officer; L.S. Kuter, Operations Officer, with Lt. H.P. Dellinger, Assistant; W.G. Bowyer, Officer-in-Charge of Entertainment.

Capt. P.R. Goode, Infantry, together with his staff of three Air Corps officers, Lts. J.M. Weikert, T.A. Sims and C.A. Harrington, were placed on duty at Langley Field from West Point to supervide the training of the West Pointers, cooperating with the staff appointed by the Post Commander.

The Cadets who arrived at Langley Field on the morning of June 15th were quartered at the barracks formerly occupied by the Air Corps Tactical School. Flights were given each Cadet following safety precautions - general instruction talk by Lt. Kuter. Classes were held during the three weeks' training period in Air Corps tactics and equipment. Optional flights in the airships of the Lighter-than-Air Company, 19th Airship, were given by Captain L.A. Lawson, Commanding Officer of the Company.

The lectures given the Cadets during their training period at Langley Field included: Machine Guns, Bombs and Bombing, by Capt. J.A. Wheeler, O.D., and Lt. J.H. Ives, A.C.; Aerial Photography, Capt. W.D. Wheeler, A.C.; Air Force, by Capt. Robert Olds, A.C.; Radio Equipment, Lieut. J.H. McCormick; Night Flying Equipment, Lieut. W.R. Wolfinbarger; Road Sketching, Lieut. W.G. Bowyer, and Navigation by Lieut. L.S. Kuter. A tour of the large N.A.C.A. laboratories was conducted by Lieut. Weikert, the wind tunnel claiming unusual interest among the Cadets.

The mornings were devoted to Air Corps instruction, and the afternoons and evenings were given over for recreational and social activities. Numerous features were planned for the Cadets; a reception and hop for each group, athletics, beach parties, picnics, boat rides, sight-seeing tours, etc., all conducted to make the stay of the Military Academy students enjoyable.

On July 7th, the First Class of the U.S.M.A. will have completed their tour of instruction at Langley Field, Fortress Monroe and Fort Bragg. The entire class will be at Langley Field on this date for a final demonstration, including parachute jumps, smoke-screen laying, formation flying, acrobatics, and a combined maneuver of Bombardment, Attack and Pursuit Aviation.

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NECESSITY OF INSURANCE FOR FLYERS

MAJOR George H. Brett, Commanding Officer of Selfridge Field, Mich., on his recent tour of midwestern flying fields, made several talks before local business men's associations and presented to the attention of the public some interesting facts and statistics of the U.S. Army Air Corps. One of the talks, given before the Junior Board of Trade of Louisville, Ky., was of such a nature as to attract the particular attention of insurance men in that city, and elicited an editorial in the Louisville insurance organ, "The Insurance Field."

Major Brett, in his experience as Commanding Officer of the 1st Pursuit Group, has had ample opportunity to learn the importance of insurance to the pilots under his command, not only for the sake of the protection of the dependents of the officers, but for the sake of the efficiency, discipline and safety record of his organization. Major Brett told the Louisville Board of Trade that during the first year of his tenure at Selfridge Field he was much worried by what he considered a very high accident and death rate among his pilots. When he went into a study of the statistics he thought he saw a relation between the accident rate and the degree of insurance coverage of his pilots. It appeared to him that the better insured pilots had the best flying and safety records. Taking this as a basis, he used his influence to have all his officers adequately insured, and the subsequent record of the 1st Pursuit Group has substantiated his theory. It indicates that insured pilots, relieved of worrying over the fate of their dependents in case of accident, make more efficient and safe flyers, for the accident death rate at Selfridge Field has declined until the 1st Pursuit Group has one of the lowest rates as compared with other Air Corps organizations. The Group death rate in air accidents in 1932 was only 3.7 percent.

Major Brett pointed out, however, that this rate of 3.7 percent only included deaths which resulted from actual air accidents incurred in ordered training and administrative flights (not including deaths from natural causes or not in line of duty), and that the rate was much higher than the accident death rate among ground troops. He has calculated that the rate for his organization, although fairly low as compared with other Air Corps units, is about one thousand times higher than the rate for the average ground troops unit. It is this difference in rates that places the Air Corps pilot in a substandard insurance category and forces him to pay much higher rates for his insurance. Major Brett drew the conclusion that the extra flying pay for Air Corps pilots was therefore very important. The extra pay enabled each pilot to carry adequate insurance and relieve him of worry over his dependents. Lack of the extra pay, or its reduction, would lower the efficiency of the Air Corps a great deal, and probably increase the death rate, for pilots would be constantly worried over the knowledge that they could not carry sufficient insurance to protect their dependents.

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A recent flight of three O-19C's from Nichols Field on a training mission to the Southern Islands included Mindoro, Negros, Cebu, Mindanao and Leyte. The pilots were Major W.B.Duty, Lts.N.L. Coto, J.C.A. Denniston, with Staff Sgts.Peterson Francisco and Sgt. Terry as passengers. Stops were made at Iloilo, Cebu, Zamboanga, Danselau and the Del Monte Pineapple Plantation, Tacloban. The trip was particularly interesting in that each port of call held some scene or point of interest for all personnel.

Similarly, a flight of six O-19C's left a week later for a training mission to Northern Luzon. The pilots were Lts. J.J.O'Connell, J.W. Andrew, A.V.P. Anderson, Jr., F.L. Anderson, A.W. Kissner and L.O. Peterson, with Captain E.P. Sorensen, Lieut. G.G. Johnston, Staff Sergeants Buckmaster and Ricks, Sergeant Elliott and Private Wells as passengers.

WAR DEPARTMENT ORDERS AFFECTING A.C.OFFICERS

CHANGES OF STATION: To Office Chief of the Air Corps: Capt. Harold L. Clark from Barksdale Field, La.
To March Field, Calif.: Capt. Virgil Hine, from A.C. Tactical School, Maxwell Field; 1st Lt. A.J.K. Malone, 2d Lt. Lloyd H. Watnee, from A.C. Technical School, Chanute Field.
To Crissy Field, Calif.: 1st Lt. Everett Davis from Philippines.
To Langley Field, Va.: Capt. Clarence B.Lober from duty as A.C. representative at plant of Goodyear Zeppelin Co., Akron, Ohio; 1st Lt. Randolph P. Williams from Advanced Flying School, Kelly Field, upon completing course.
To Hawaiian Dept.: 1st Lt. George H. Sparhawk from Sheffield Scientific School, Yale Univ.
To Randolph Field, Texas: Capt. Orin J.Bushey from Scott Field; Capt. John Y. York, Jr. from Wright Field, for flying training.
To Rockwell Field, Calif.: 2nd Lts. John T. Murtha, Jr., from Engineering School, Wright Field; Wm. B. Blaufuss and Franklin C.Wolfe from A.C. Technical School, Chanute Field.
To Wright Field, O.: 1st Lt. John S.Gullet from Mitchel Field; 2nd Lt. Roscoe C.Wilson, from A.C. Engineering School.
To Mitchel Field, N.Y.: Capt. S.G.Frierson.
Assignment to Hawaiian Dept. revoked.
DETAILED TO AIR CORPS, and to Randolph Field for flying training: 2nd Lieuts. Everett W. Barlow, Hugh T. Cary, Harold R. Everman, Alexander J. Sutherland, Henry M. Bailey, Infantry; John L. Inskeep, Cavalry.
PROMOTIONS: Lt.-Col. Benjamin D. Foulois to Colonel; Major Robert M. Goolrick to Lieut.-Colonel; 2d Lt. Milton M. Towner to 1st Lt., all ranking from May 24, 1933; 2d Lt. Fay R. Upthegrove to 1st. Lt. rank June 1, 1933.
ORDERS REVOKED: Assignment of Major Rosenham Beam as Instructor, Cavalry School, Ft.Riley.

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MAJOR KIRBY JOINS CATERPILLAR CLUB

It is gratifying to learn that Major Maxwell Kirby is well on the road to recovery from injuries received June 19th, when he leaped from his plane in the vicinity of Great Mills, a settlement 8 miles south of Leonardtown, Md. Major Kirby was enroute from Langley Field to Bolling Field when his plane caught fire. Due to its low altitude at that time, Major Kirby's parachute did not check his fall sufficiently, and he was rendered unconscious upon striking the ground. An ambulance from Bolling Field brought him to Walter Reed General Hospital. It was feared that his skull was fractured, but examination at the hospital disclosed that his injuries were not so serious as at first reported.

Major Kirby, who is Post Operations Officer at Langley Field, was assigned to this duty following a tour of service in Hawaii. Prior to that time he was in charge of the Air Corps ROTC Unit at the University of Illinois, Champaign. He served overseas during the World War as a member of the 94th Aero Squadron, and is officially credited with the destruction of one enemy aircraft in combat. He was cited in Army Orders for gallantry in action during the Meuse-Argonne offensive.

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Pistol firing was recently completed by 12 officers of the 91st Observation Squadron. All qualified, and the new Commanding Officer, Major Donald P. Muse, led the list with a score of 91.6.

RESUME OF AIR CORPS - ANTI-AIRCRAFT EXERCISES

By the News Letter Correspondent

With the return of the 2nd Provisional Bombardment Group Headquarters and the 49th Provisional Bombardment Squadron to Langley Field on May 25th, and the return of the 11th and 31st Provisional Bombardment Squadrons to March Field from Patterson Field, Ohio, the 2nd Provisional Bombardment Group and the Air Corps - Anti-Aircraft Exercises, Fiscal Year 1933, became a matter of history. Since April 5th, the Langley Field contingent was based at Patterson Field. They were joined by the 11th and 31st Squadrons a few days later, at which time an intensive campaign of preliminary training and equipment conditioning was launched.

Following the Fort Humphreys Exercises held during the preceding year, it became quite apparent to Bombardment Aviation that there was work to be done in the development of new tactics and the perfection of technique. The efforts of a year put forth in this direction were not wasted. The 11th and 31st Squadrons coming from the West Coast to form an integral part of the 2nd Provisional Bombardment Group, of which the Group Headquarters personnel and the 49th Provisional Bombardment Squadron were from Langley Field, fitted into the scheme of things without the slightest difficulty or loss of time. The fact that a composite group containing squadrons whose normal peace time stations are separated by more than 2,000 miles, could start functioning smoothly and efficiently from its inception is a high and tangible tribute to the coordination of training throughout the Air Corps being accomplished by the Office of the Chief of the Air Corps. The task confronting this Provisional Bombardment Group was by no means simple. In the first place, there were three distinctly different types of airplanes to coordinate an exacting time schedule with one squadron of B-2's, one of B-7's and the third of B-9's. Many of the first attempts to conduct group day attacks on the split second closely resembled a jig-saw puzzle on a map. In the second place, a large amount of special equipment had to be installed at Patterson Field subsequent to the arrival of units. It was difficult to install and difficult to maintain. In the third place, certain developments had been made in the technique of delivering night attacks with which all units were not thoroughly familiar. This necessitated the installation and use of special lights on aircraft in the group.

Although extremely unfavorable weather conditions were encountered during the major portion of the preliminary training period, the final phases of the exercises from May 15th to May 24th were conducted without bad weather.

Although there has been no publication to date of higher staff conclusions or umpires' reports, we of the extinct 2nd Provisional Bombardment Group feel confidently down to the last man, whether he be from Langley or March Field, that a unit of the Air Corps has seldom, if ever, been confronted with a more exacting task - a mission requiring a day to day series of most exacting time schedules for both day and night operations, an extended period during which rest and sleep were to be had only by chance and not by schedule and last, but not least, a job where the slightest breakdown in 100% teamwork would have spelled failure or disaster.

The personnel of the composite group returned to their respective stations with letters of commendation from the Commanding General, 1st Provisional Wing, and immeasurable satisfaction of knowing that each had contributed his utmost to a job well accomplished.

COMBAT EXERCISES BY 26TH ATTACK SQUADRON

The 26th Attack Squadron, stationed at Wheeler Field, T.H., recently conducted a s ries of interesting combat exercises on the Waimanalo Gunnery Range. In the first exe held in conjunction with the quarterly test airplanes participated. In addition to the regular service load, including all guns, c water equipment, etc., each airplane carri 200 pounds of .30 caliber machine gun ammu tion, five 25-pound fragmentation bombs, and five 25-pound dummy bombs. The machine gu and live bombs were directed against a targ consisting of 400 silhouette targets scatte over an area 70 yards by 300 yards, repres ing an Infantry battalion on the march. Th dummy bombs were dropped in salvo on a 50-f circle representing an enemy transport. Th results were excellent, 1529 hits being sco by both machine gun firing and bomb fragmen Only 16 of the 400 targets escaped being hi All of the dummy bombs were dropped within circle representing the transport.

A week later the Squadron fired on and bo three groups of silhouette targets. Each g consisted of 25 targets and represented a l ing party in a boat. Each element of three planes made one attack on one target. The number of targets was 75; number of hits, 6 total number of hits, 237.

Other combination gunnery and bombing mi sions were conducted at the rate of one or t every week for six weeks. The results of t missions were as satisfactory as the first

Experiments on simulated dropping of dela fuse bombs from low altitude provided some i teresting results. Dropping these bombs sim ly from about 20 feet and while flying in 3- ship "V" formation, the following results w obtained: Out of 90 bombs dropped; 86 were the target representing the battalion of In fantry. Two were 35 feet over. Out of 80 bombs dropped on the same target and in the same manner, 79 were in the target.

These exercises have demonstrated the stru fire power of attack aviation employed agai ground troops. It has also shown the desir bility of delayed fuse bombs for more accur work and to afford more protection for the a planes from anti-aircraft activity by allowi extremely low flying. The 11th Photo Secti of Luke Field took motion pictures of these tivities under the direction of the Division Signal Officer. These pictures show the loc ing of the bombs and machine guns, the appro es to the targets, the attacks, and the resu

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AIR CORPS SOON TO GET NEW ATTACK PLANES

Work is progressing satisfactorily on the new fast two-seater Attack airplanes, known the Curtiss A-12, which are now being built for the U.S. Army Air Corps by the Curtiss Aeroplane and Motor Company of Buffalo, N.Y.

The Curtiss A-12, which is somewhat simila in outward appearance to the Curtiss A-8, is low wing monoplane of all-metal construction and is equipped with slots and flaps. The slots are built in the leading edge and the flaps on the trailing edge of the wing to pro vide a relatively low landing speed. The Curtiss A-12 is powered with one Wright "Cyclone," 700 horsepower engine.

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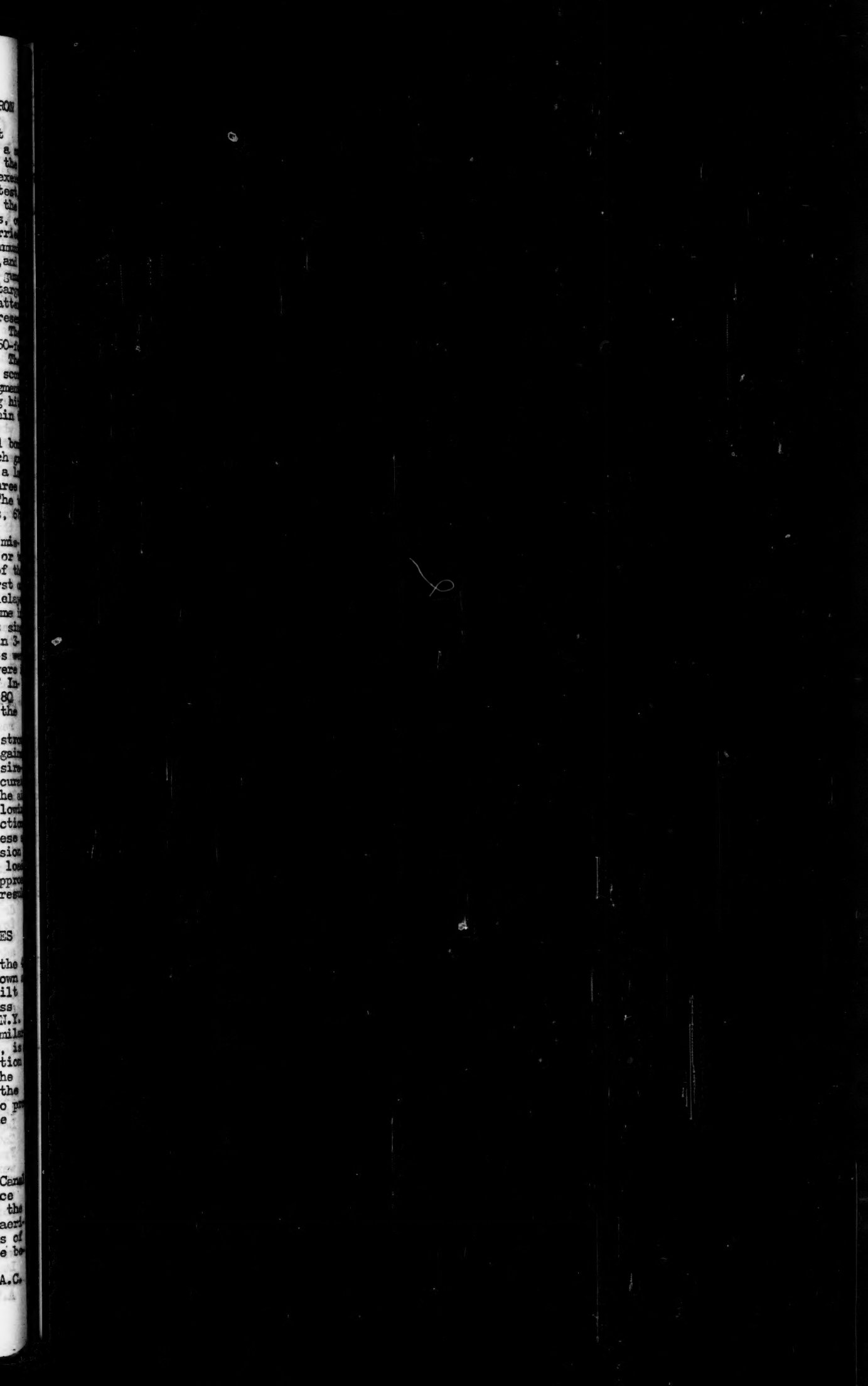
The 44th Obs. Squadron, Albrook Field, Cana Zone, has been conducting a Reconnaissance School for officers of other branches of the service. The course consists mainly of aeri al reconnaissance and observation, and is of one month's duration. Three officers are be ing trained during this period.